REMARKS

By the above actions, claims 1 and 10 have been amended. In view of these actions and the following remarks, reconsideration of this application is requested.

At the outset, the Examiner's indication of allowable subject matter with respect to claims 5-9 has been noted with appreciation. However, since the claims from which these claims depend are believed to be equally patentable for the reasons set forth below, no action is being taken at this time to place this claims in independent form.

With regard to the rejection of claims 5-9 under 35 USC § 112 for indefiniteness on that basis that insufficient antecedant basis exists for the recitation of "the vessel" in line 3 of claim 5. However, the first clause of claim 5 recites "wherein the soldering zone includes ***a*** vessel" (emphasis added), and thus provides clear and proper antecedent basis for the subsequent recitation of "the vessel" in line 3. Thus, this rejection is inappropriate and should be withdrawn, and such action is hereby requested.

Claims 1, 2, 10, 11, and 18-22 have been rejected under 35 USC § 102 as being anticipated by the Leicht patent. However, this rejection is inappropriate for the following reasons.

In the Leicht patent, the outlet end of a soldering apparatus 2 is connected to the inlet end of a cleaning apparatus 1 with a continuous conveying path running through them. In the soldering apparatus 1, soldering is carried out within vapor phase region 203 of a treating chamber 201. Column 4, line 60 to column 5, line 50, cited by the Examiner relates entirely to the cleaning apparatus 1, not the soldering apparatus 2, except for the last paragraph of the specification which spans only lines 34-50 of column 5. In this paragraph, Leicht teaches away from the forced condensation of the present invention in that he describes how condensation can damage the work pieces and thus proposes that the workpieces be heated prior to entering the treating chamber 201 in which the vapor phase region 203 is located to prevent condensation of the heat transfer medium on them. There is absolutely no teaching or suggestion to shut off the vapor generating means and produce forced condensing of the condensing vapor in the soldering zone at the end of a soldering process. In fact, such an operation would be entirely inconsistent with the continous conveyance of workpieces

through his soldering and cleaning appartus. Therefore, it should be clear that Leicht is not even capable of rendering the invention as defined by claim 1 obvious, let alone anticipating same. Accordingly, this rejection is requested to be withdrawn.

Claims 1, 2, 10, 11, and 18-21 have been rejected under 35 USC § 102 as being anticipated by the Mishina et al. patent. However, the Mishina et al. patent cannot anticpate the present invention for the following reasons.

The Mishina et al. patent discloses a vapor reflow type soldering method and apparatus in which the work pieces are conveyed contiuously from the preheating chamber 2 though a passage 3 to a vapor tank 4, from which they travel through a passage 5 to a cooling chamber 6. Thus, while in the presently claimed invention the "soldering zone includes gates," the soldering zone of the Mishina et al. patent has no gates as reflected by their indication the passages 3 and 5 "are provided with cooling coils 8 and 10, respectively, for cooling a saturated vapor b of a thermomedium B *drifting out of the vapor tank 4*." (emphasis added). Additionally, while some of the vapor is condensed back to a liquid by these cooling coils 8, 10, such is performed outside of the soldering zone and only with respect to the portion that drifts out of the vapor tank. Thus, clearly there no forced condensing performed in the vapor tank as is the case for the present invention. As such, the Mishina et al. patent can neither anticipate nor render obvious the present invention so that the § 102 rejection based thereon should be withdrawn and such action is hereby requested.

Claims 1-4, 10, 11, and 18-22 have been rejected under 35 USC § 102 as being anticipated by the Rahn patent. However, for the reasons indicated below, this rejection is also inappropriate.

In particular, there is no disclosure in the Rahn patent of the use of a protective gas as set forth in claim 1, nor is there any disclosreu of forced condensing being performed in the soldering zone. The only condensing that is disclosed is that performed by the condensor means 109 in the duct 105 which extends from the atmosphere outlet 103 of the enclosure 3 in which the treatment chamber 5 is located. Thus, the only treatment vapor that is condensed is that extracted from the treatment chamber for controlling the pressure of the atmosphere within it. Accordingly, it is not seen how the Rahn patent can properly be considered to

anticipate the present invention as claimed, so that withdrawal of the rejection is in order and is requested.

Claims 12-17 and 23 have been rejected under 35 USC § 103 as being unpatentable over the combined teachings of the Rahn and the Master et al. patents. However, the disclosure of the Master et al. patent cannot overcome the shortcomings of the Rahn patent that were noted above.

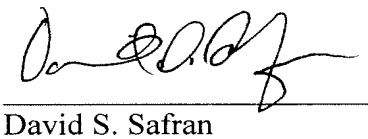
That is, the Master et al. patent does not relate to a vapor phase soldering apparatus/process of the type disclosed by Rahn (or the present invention) but rather relates to a solder reflow furnace, and in particular, to a flux effluent collector for preventing flux contamination. Such a disclosure has no relevance to vapor phase soldering, and even if it did, the only condensation disclosed by Master et al. is of flux in the furnace exhaust and not any other vapors, and is, at best, comparable to the condensation performed by Rahn's condensor means 109 which also is performed in an exhaust line. Thus, any possible combination of these two references would merely result in use of Master et al.'s condensation device in place of that used by Rahn and the result still would not be an arrangement as claimed in which forced condensation is performed in a sodering zone containing a protective gas as set forth in applicant's claim 1. Therefore, this rejection should also be withdrawn.

The references that have been cited but not applied by the Examiner have been taken into consideration. However, since these references were not found to be relevant enough by the Examiner to apply against the original claims, no detailed comments thereon are believed to be warranted at this time.

While this application should now be in condition for allowance, in the event that any issues should remain after consideration of this response which could be addressed through

discussions with the undersigned, then the Examiner is requested to contact the undersigned by telephone for that purpose.

Respectfully submitted,



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